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Application No. 10/650,459
Amendment Dated October 2, 2006
Reply to Office Action Dated May 30, 2006

REMARKS

Claims 1-12 are pending.

Claims 1-12 stand rejected.

Claim 1 has been amended.

Claims 1-12 are presented herein for further consideration on the merits.

No new matter has been added.

Applicants begin by noting that paragraph [0007] has been amended to correctly reflect the prior art background document. Applicants further note that the Examiner has already reviewed the document, as the corresponding U.S. Patent (to Perrin) was cited in the previous Office Action and again in this Office Action. Paragraph [0023] has been amended to correct a minor informality in the language, allowing the sentence to read more clearly. No new matter has been added.

Turning to the substantive rejections, the Examiner has rejected claims 1-6 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Kim et al. (U.S. Patent No. 6,563,994) in view of Perrin et al. (U.S. Patent No. 6,576,166). Claims 7-11 are further rejected as obvious in view of Kim and Perrin. Claims 8, 10 and 11 are further rejected as obvious over Kim. Claims 7 and 9 are further rejected as anticipated by Kim.

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Applicants disagree with the Examiner's contentions and respectfully submit the following remarks in response.

The present invention as claimed in claim 1 is directed to a method of fabricating a graded material optical fiber whose refractive index varies between its center and its periphery. Among other steps, the method includes the step of drawing the *liquid* preform to obtain a graded index plastics material optical fiber, in which the production of the preform has a step with substantially *no flow of the compositions along the system*.

Paragraph [0064] of the specification recites:

[0064] Withdrawing the central tube 3 in the direction of the arrow A (as symbolically represented in dashed outline) brings the compositions 12, 13 into contact and thus form a liquid preform (not shown) whose index features the required step. The area Z1 initially reserved for isolating the compositions then corresponds to the area of formation of the stepped index preform. According to the invention, *the preform is obtained with no flow of the core and cladding compositions along the system 1, with the result that the rate at which the preform is produced no longer depends on the drawing rate*. In this sense the method according to the invention is discontinuous. (emphasis added)

As noted in the previous Amendment, the problem solved by the present invention is to find a method in which a liquid preform can be produced without stresses in order that the production time of the preform can be adjusted as a function of the characteristic of the composition chosen, the temperature of the system and the nature of the interaction between the compositions and the kinetics of those interactions.

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In the Examiner's reasons for continuing the rejection (page 4 of the Office Action), the Examiner states that claim 1 does not specifically recite that the drawing of the preform occurs when it is still liquid. Applicants have amended claim 1 accordingly to clarify that in fact the drawing step of the present invention does occur when the perform is still liquid.

However, the Examiner contends that the Kim reference (PCT 777) teaches all of the elements of the invention stating:

"Clearly, the inventive concept of producing the fiber from a liquid perform employing step of substantially now flow of the liquid compositions along the perform formation system is met by PCT-777, and this reference would hence constitute the closest prior art. The fact the PCT -777 later solidifies the liquid perform for drawing is submitted to have been something that one of ordinary skill in the art would have known to modify should one desire to perform the drawing of the perform while it is still in a liquid state. This is shown by Perrin et al."

Applicants respectfully submit that such a reading of the references is in error.

Claim 1 specifically recites the limitation that the method for producing the graded material optical fiber includes both drawing of the preform in a liquid state to obtain the graded index plastics material optical fiber and that the production of the preform has a step with substantially no flow of the compositions along the system.

The Examiner suggests that it would have been obvious to modify the step of drawing the solid perform in Kim to a step of drawing the preform in a liquid state in Perrin.

However, in order to establish a prima facie case of obviousness the Examiner must show

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the following steps:

- 1) set forth the differences in the claim over the applied reference;
- 2) set forth the proposed modifications of the references which would be necessary to arrive at the claimed subject matter; and
- 3) explain why the proposed modification would be obvious.

To satisfy step (3), the Examiner must identify where the prior art provides a motivating suggestion to make the modifications proposed in step (2). The mere fact that the prior art may be modified as suggested by the Examiner does not make the modification obvious, unless the prior arts suggests the desirability of the modification. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absents some teaching or suggestion or incentive to combine them.

In the present invention, the Examiner is claiming that modifying Kim to draw the preform in the liquid state (as shown in Perrin) is an obvious modification. However, neither Kim nor Perrin teach such a modification. In the process of manufacturing graded material optical fibers, the steps in the method of production have important effects on the product produced and are not simply modified because it may be possible to do so. Such drawing steps in Kim would only be modified if there is a particular reason to do so, and, if such modifications would not adversely affect the outcome of the product.

In Kim, as noted in the previous Amendment, a method for making an object with

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radially-varying properties and an apparatus and method of operating the same is disclosed. Such method includes the step of obtaining a solid cylindrical object in said system (col. 9 lines 8-9), and transforming the cylindrical object (solid) to a gradient index plastic optical fiber by thermal drawing (col.9 lines 21-24).

The system and method disclosed in Kim is designed for the purpose of providing a method of preparing an object with radially-varying properties in order to reduce the inherent problem of gradient-index plastic optical fibers, which is to *produce optical fiber with a low attenuation due to complicated structure of the extrusion die and contaminants resulting from the thermal decomposition of polymer from a co-extrusion process* (col.3 lines 6-14).

Modification of the drawing step from occurring on a solid preform to being performed on a liquid preform is therefore not necessarily without consequence to the Kim procedure. It is *not obvious* to simply replace the drawing on a solid preform from Kim with an alternate step of drawing the preform in a liquid state as in Perrin, absent some teaching or suggestion in Kim or in Perrin to make such a substitution.

The cited prior art either alone or in combination with one another fails to teach or suggest a method for fabricating a graded material optical fiber that includes both the drawing of the liquid preform to obtain a graded index plastics material optical fiber and in which the production of the preform has a step with substantially no flow of the compositions along the system as claimed in independent claim 1.


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As such, Applicants respectfully submit that the cited prior art does not teach or suggest all of the elements as claimed in claim 1, and respectfully request that the rejection of this claim be withdrawn. Likewise, as claims 2-12 depend from claim 1, these claims should be allowed for at least the same reason.

In view of the forgoing, Applicants respectfully submit that pending claims 1-12 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application he is invited to contact the undersigned at the number listed below.

Respectfully submitted,

By



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